DOCUMENT RESUME

ED 178 424 SO 012 085

AUTHOR Shulman, Lee S.
TITLE Research on Teaching in the Arts: Review, Analysis, Critique. Occasional Paper No. 19.
INSTITUTION Michigan State Univ., East Lansing. Inst. for Research on Teaching.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE May 79
CONTRACT 400-76-0073
NOTE 40p.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Aesthetic Education; *Course Content; *Educational Practice; Elementary Secondary Education; Ethnography; *Fine Arts; Information Dissemination; *Research; Research Needs; Research Problems; Research Utilization; Teacher Role

ABSTRACT

This review of literature examines and critiques research on the relationship among subject matter, teaching, and research in the arts. Research on the relationship between content and teaching practices is examined first. The author questions theories of the teacher as artist, discovery learning, and drill-and-practice instruction as related to creative performance in students. The section on the relationship between content and research discusses the insistence that researchers become artists in order to effectively conduct investigations of teaching in the arts. The merits and limitations of ethnography, an anthropological approach to research, are discussed in the section on teaching practices and approaches to research. The section also suggests that practitioners can aid in conducting research through their expertise, their understanding of how to cope with the realities of the classroom, by providing research criteria, and by functioning as co-investigators. The relationship between research and practice is considered in terms of information dissemination. The author concludes that researchers should be engaged in diffusing specific materials and media of instruction, attempting to influence prevailing views, providing opportunities for critical reflection, and creating instances of practice. The final section considers the place of the arts in the total curriculum. In the conclusion, the author stresses the avoidance of disciplinary dogma in planning research programs and choosing among research methods. (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED178424

Occasional Paper No. 19

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

RESEARCH ON TEACHING IN THE ARTS:

REVIEW, ANALYSIS, CRITIQUE

Lee S. Shulman

Published By

The Institute for Research on Teaching
252 Erickson Hall
Michigan State University
East Lansing, Michigan 48824

May 1979

SO 012 085

This work is sponsored in part by the Institute for Research on Teaching, College of Education, Michigan State University. The Institute for Research on Teaching is funded primarily by the Teaching Division of the National Institute of Education, United States Department of Health, Education, and Welfare. The opinions expressed in this publication do not necessarily reflect the position, policy, or endorsement of the National Institute of Education. (Contract No. 400-76-0073)

Institute for Research on Teaching

Teachers' thoughts and decisions are the focus of studies currently under way at Michigan State University's Institute for Research on Teaching (IRT). The IRT, founded in April 1976 with a $3.6 million grant from the National Institute of Education, has major projects investigating teacher decision-making, including studies of reading diagnosis and remediation, classroom management strategies, instruction in the areas of language arts, reading, and mathematics, teacher education, teacher planning, effects of external pressures on teachers' decisions, and teachers' perceptions of student affect. Researchers from many different disciplines cooperate in IRT research. In addition, public school teachers work at IRT as half-time collaborators in research, helping to design and plan studies, collect data, and analyze results. The Institute publishes research reports, conference proceedings, occasional papers, and a free quarterly newsletter for practitioners. For more information or to be placed on the IRT mailing list please write to: The IRT Editor, 252 Erickson, MSU, East Lansing, Michigan 48824.

Director: Lee S. Shulman

Associate Director: Judith E. Lanier

Editorial Staff:

Lawrence W. Lezotte, coordinator of Communications/Dissemination
Linda Shalaway, IRT editor
Janet Flegg, assistant editor

Research on Teaching in the Arts: Review, Analysis, Critique[1]

Lee S. Shulman[2]

The purpose of this paper is to discuss the major issues in research on teaching in the arts. I will review the central questions of relationships among subject matter, pedagogy, and research in this field. I will also examine those questions which most affect the conduct of fruitful research in this important area.

The role I play here is made both easier and more difficult by my own marginality to the arts. The handicaps of marginality are clear to everyone, but there are also virtues. These include a relative freedom from certain biases and preconceptions that typically render clear characterization of familiar settings extremely difficult.

I therefore view my role as akin to that of the traditional ethnographer. As an outsider, I am seeking the indicants of a strange culture through examination of its rituals, lore, patterns of interchange and intercourse, social grouping and barriers, uses of language within and between groups, and conflicts and resolutions. Conflicts, in particular, reveal patterns of value and commitment otherwise veiled by ritual and other forms of socially patterned behavior. My goal, therefore, is similar to that stated by Clifford Geertz (1973) as the

---

[1] This paper is a slightly modified version of a chapter which will appear in Kneiter, G.L., & Stallings, J. (Eds.) The teaching process & arts and aesthetics: Third yearbook on research in arts and aesthetic education. CEMREL, Inc., 1979. (In press)

[2] Lee S. Shulman is professor of educational psychology and medical education and director of the Institute for Research on Teaching at Michigan State University.

purpose of anthropology, to discern the "webs of meaning" of those who work in the fields of art and aesthetic education, as well as those who would venture forth into those fields to teach and investigate.

This expository and interpretive activity cannot function through restatement alone. These comments may be analogous to the Talmudic view of the four levels of Biblical exegesis: *p'shat:* explication of the plain meaning of the text; *d'rash:* interpretation of plain meanings; *remez:* broader inferences based on discerning nuances or "hints" from the text; and *sode:* barely bridled speculation soaring effortlessly from the text and tethered loosely, if at all, to its sources (normally the level of exegesis assigned to the Kabbala, or mystical literature). The reader should be forewarned that there will appear little interpretation of the first kind, much interpretation of the second and third kinds, and occasional forays into the dangerous altitudes of the fourth.

The Plot, Characters, and Essential Tensions

This first brief section will proceed somewhat dramaturgically, by review, on three central elements in research on teaching in the arts: plot, characters, and essential tensions.

The plot is rather straightforward. Previous reviews and discussions of the field of research on teaching reveal that relatively little research has been conducted on the teaching of the arts in particular. There are sharp disagreements among educators and researchers regarding what constitutes "good education in the arts." The most significant disagreements occur between specialists in the subject matter and educational practitioners. This conflict is not readily resolved and remains a source of tension. Here, then, is the plot, which, like many academic discussions, has built up to a crisis awaiting resolution.

There appear to be four distinctive sets of characters in this drama. There are (1) theorists of the arts and aesthetics education; (2) practitioners in teaching the arts, who are primarily teachers and administrators, not always arts specialists; (3) researchers on teaching, both general and in the arts; and (4) a group which I characterize as "the fourth world" -- teacher educators, developers, educational consultants, and the like. The characters inhabiting the first three worlds hold distinctively different perspectives on the problems of research on teaching in the arts. Each set of characters has accusations to make to the others:

> "How can you claim to be able to study the processes of teaching in the arts if you cannot tell the difference between good art and bad art?" (Directed at researchers and practitioners by arts theorists and specialists.)
>
> "So much abstract and sophisticated talk about the beautiful, the aesthetic . . . . Where is the real world of chalk dust, hall passes, and active children?" (Directed by practitioners to the theorists and researchers.)
>
> "All this mysticism with descriptions couched in esoteric aesthetic terms. . . . How is it possible to investigate the processes of art education as a means for improving it, if you will not formulate clearly what you really mean?" (Directed by researchers to arts theorists.)

These characters and their questions define the essential tensions of my subject and, I suspect, the durable dilemmas of research and teacher preparation in the fields of aesthetic education. I shall now turn to a more focused examination of the character of those tensions.

Significant Perspectives: Subject Matter, Practice, Research

Each of the first three constituencies -- subject matter specialist, practitioner, researcher -- represents one of the three central elements, the relationships among which define many of the issues in this field. These three elements are: (1) the subject matter or *contents* of arts/aesthetic education; (2) the processes of *pedagogy* in arts/aesthetic education; and (3) the processes of *research* in arts/aesthetic education. It is generally assumed that we should strive for accord among those elements, ensuring that they are consistent with one another. The grounds for that expectation and the conditions under which consistency among elements should be defined constitute the basis for much debate.

The Accord of Content and Pedagogical Practice

The first important assertion is that the contents of arts education ought to be, in some fashion, congruent with the processes of pedagogy in the arts. This is first seen in Efland's (1979) scholarly contribution, where he attempted systematically to link conceptions of art and conceptions of pedagogy. It comes up again in Chapman's (1979) study of the relationships between conceptions of art education held by neophytes and the ways in which they planned a hypothetical teaching unit. This commitment to the importance of consistency between the content of art and the process of pedagogy is the breeding ground for a popular metaphor "the teacher as artist." [3]

The general acceptance of the notion that both teacher and learner in the arts must perform artfully -- that is, creatively, inventively, independently (in some art forms), collaboratively (in other arts) -- is

[3] The alternative formulation, "the artist as teacher," is itself interesting. In arguing that one should stive for accord between two elements, it is often left unstated which of the two elements should define the terms for the accord. In principle, it seems as reasonable to call for artists to condition their efforts at aesthetic and expressive communication on the demands of education as it is to call upon teachers to perform in a manner consistent with the doing of art. Plato and Marx would have felt quite comfortable with the view of art as teaching.

brought into the sharp focus of controversy with Rosenshine's (1979) interpretation of the major findings of contemporary research on teaching (see also, Rosenshine, 1976). Rosenshine reported, in his summary of the results of research on teaching, that the form of teaching most conducive to pupil achievement of basic skills was "direct instruction." Direct instruction was precisely defined by Rosenshine. It bore little resemblance to the arts educator's preferred view of the teacher and learner as artists. Both Rosenshine and others recognized that generalizations from research on teaching reading and arithmetic to the teaching of the arts must be made cautiously. However, in the absence of countervailing evidence from other studies, the existing body of research must be taken seriously. A problem has been set: Can educators continue to claim the need for accord between the nature of art and the teaching of art when a growing body of evidence appears to point to the superiority of direct instruction for achieving a wide range of instructional goals?

I shall not now provide a critique of Rosenshine's conclusions. Others have already done so (e.g., House, Glass, McLean & Walker, 1978). Whether or not his conclusions are well-grounded in this particular case, they provide an opportunity to examine critically the assertion that effective instruction in a subject matter must always be congruent with the manner in which mature practitioners of the subject field -- be they artists, scientists, or mathematicians -- accomplish their daily work. Despite its intuitive appeal, the assertion is more readily offered than defended.

During an earlier part of my career I was actively involved in what became known as the "learning by discovery" controversy (Shulman & Keislar, 1966). There were many aspects to this controversy. One

recurring question was whether pupils need to learn *by* discovery to learn *to* discover. Did didactic, guided instruction doom the pupil to rote learning? Was discovery teaching the only road to higher cognitive accomplishments and creative thinking? Much of the curriculum revolution of the 1960s in mathematics, science, and the social studies was predicated on the assumption that there must be congruence between instruction and intended achievement. Since the post-Sputnik era aimed to produce a generation of creative American scientists, the new curricula were intended to teach science and scientific reasoning by discovery.[4]

Is there a body of research that reflects on this question? I am ignorant of any such work in the arts. However, there is some fascinating research in the learning of mathematics and science which is suggestive. Groen and Resnick (1977) have been studying the teaching of computational algorithms to first and second graders (see also Woods, Resnick, & Groen, 1975). One of their striking findings was that pupils heuristically tranform algorithms they have been taught into new algorithms which they invent.[5] That is, learners act upon the content of instruction and transform it into their own terms. It appears both unnecessary and inaccurate to assume a one-to-one correspondence between what is taught and what is learned. It appears that the pupils studied by Groen and Resnick had learned spontaneously to transform algorithms into new forms which made better sense to them.

---

[4]Ironically, careful analysis of the curriculum materials revealed that the accomplishment typically fell far short of the rhetoric (Shulman & Tamir, 1973).

[5]Algorithms are rules which *guarantee* correct solutions when correctly applied. Heuristics are more general strategies or "rules of thumb" which are *likely* to lead to correct answers when appropriately employed.

They had learned to discover, if you will, from didactic instruction. Similar research has taken place in the teaching of science to older children (Finley, Note 1) in which strategies for classifying rocks were taught in one fashion, but inventively transformed in application.

More examples can be drawn from general experience. Chess masters typically learn their craft through carefully studying the games played by other masters. Moreover, they not only study the games, they replay them move by move and commit them to memory. Yet, they do not simply learn to mimic what they have memorized. They are capable of transforming the mimetic to the pragmatic. Were they not so able, they could rarely win a chess game.

I do not present these examples as sufficient evidence to refute the assertion that there should be congruence between the content of subject matter and pedagogical practice. I firmly believe that the relationship between the two elements is far more complex than typical educational polemics would allow. However, I believe these few examples are adequate to give pause to those who argue in principle that mechanistic drill-and-practice instruction necessarily sabotages subsequent creative, aesthetic performance. This is a question which must be examined through careful empirical study of artists, teachers, and pupils complemented by the sort of careful philosophical analysis which does not confuse disciplined inquiry with persuasive rhetoric.

Accord of Content and Research

Educators and researchers are appropriately on guard against the thoughtless importation into the study of arts and aesthetic education of research paradigms and methods more appropriate to other domains of

teaching and experience. They are especially cautious regarding the employment of the psychological methods of research on teaching using experimentation or systematic categorical classroom observation schedules in the study of arts education. They therefore tend to turn toward the more recently popular approaches of descriptive ethnographic research on teaching as alternatives to the more traditional methods. Pitirim Sorokin (1956) warns against the inappropriate consequences of "quantiphrenia" -- a madness in which the insane attempt to put numbers on all manner of phenomena. Instead, claim the critics, those modes of research which are themselves more artful than scientific should be sought. Students of arts education must strive for the goal of "researcher as artist." Therefore, to the extent that the various forms of ethnography appear more subjective and artful than do the experimental and psychometric traditions of educational research, it is argued that ethnography is the approach of choice for the student of arts education.

I am uncomfortable with the insistence that researchers become artists for investigations of teaching in the arts. An extreme form of that position would demand that research on teaching mathematics be legitimate only when conducted using differential equations, and research on the teaching of history be properly pursued only in retrospect. Moreover, I find the rich case study and evocative research report as useful for understanding science teaching as it is for appreciation of arts instruction. Here again, the rhetorical call for congruence between the content of the subject matter and the mode of inquiry must be treated critically. It is not the subject matter alone which ought to determine the proper mode of investigation. It is a combination of the subject matter, teaching, learning, and instructional setting which guide the questions asked in an inquiry. These questions properly determine the

appropriate research methods. It is unfair to extract a single element, such as subject matter, and demand that all other facets of the inquiry flow from it. It is one thing to seek accord among the elements; it is quite another to demand that one of the elements achieve hegemony over all others and define the terms for the congruence. I thus conclude this section with the admonition that those who study arts education use the specific questions they address as the basis for selecting modes of research rather than base that choice on a consideration of the nature of the subject matter alone.

Accord of Pedagogical Practice and Approaches to Research

A recurring theme of research on teaching in the arts is the continued search for alternatives to the experimental, psychometric, and quantitative observational models that have heretofore characterized research on teaching. Though I too have participated in criticism of these models of research, I would note a distinction between error and insufficiency. These methods are not, in principle, improper for the understanding of educational processes. They become problematic when they are considered sufficient for answering all the questions that educators might ask. As Schwab (1958) argued persuasively in his analysis of "the corruption of education by psychology," the problem of any theoretically grounded approach to education is its necessarily narrow perspective. Alternative approaches to educational research methodology, such as ethnographies, will tell different things about teaching. They will not necessarily tell more.

There is a tendency to view ethnography as a monolithic, undifferentiated method of research. It is important to recognize that ethnography is a generic envelope in which we place a number of very different modes of investigation. Ethnography is a family of

inquiries easily as diverse as psychology or philosophy. It would be a grave error to generalize from the particular approaches to ethnographic research on teaching reflected in the papers by Tikunoff and Ward (1979) or Bussis, Chittenden, and Amarel (1979) to the entire field of school ethnography. These fine papers were commissioned to speak to the role of teacher collaboration in research on teaching; I am sure they did not intend for all ethnographic research to be seen as instances of teacher collaboration, nor for the particular forms of collaboration reported in their papers to be viewed as necessary features of all ethnographic inquiry. As Erickson (Note 2) has clarified, the approaches to ethnography are themselves diverse and multipurpose.

What is shared by most approaches properly called ethnographic is their interest in characterizing subjective experience. They wish to capture the ways of seeing the world held by the participants in situations rather than as characterized "objectively" by outside observers. Thus it is that Margaret Mead dubbed anthropology a form of "disciplined subjectivity." Since it is difficult to be disciplined about one's own subjectivity in one's own culture, anthropologists have typically gone to strange cultures and alien lands to pursue their investigations. When attempting to do ethnographic research in one's own culture, as is the challenge for our contemporary educational ethnographers, problems are posed by the very familiarity of researchers with their phenomena. The ethnographer's challenge, then, is to "make the familiar strange" (Erickson, Note 3) or to "make the commonplace problematic" (Smith, Note 4).

A goal of school ethnographies is to capture the ways in which the participants in school situations experience and cope with the features of those settings. This persepctive will be an important

element of any developing approaches to the proper study of arts education. There are other research approaches which also study the experiences and expertise of practitioners and those learning to practice. Many of these are well represented through an examination of a strategy of research advocated by the philosopher David Hawkins (1966) in his apt phrase, "wisdom of the practitioner."

Wisdom of the Practitioner

In 1966 Hawkins published a paper entitled, "Learning the Unteachable," a phrase which may characterize much teaching in the arts. In this paper he introduces his conception of the wisdom of the practitioner.

> Our efforts are being made, I believe, in an historical situation where the best practice excels the best theory in quite essential ways; this fact defines a strategy we ought to follow.
>
> There have often been times in the history of science when the personal knowledge of practitioners was significantly deeper than anything embedded in the beliefs and writings of the academically learned. Indeed, science has never started in a social vacuum, but has grown typically out of the interplay of *Theorizein* and those practically achieved mappings of nature embodied in the working arts. (p. 3)

Thus, one reason for carefully studying the thought, strategies, and motives of teachers is that the practical wisdom of the teacher may well exceed that of the putative expert in important ways which, properly understood, can increase understanding of pedagogical expertise.

However, the concept of the wisdom of the practitioner goes beyond the concept of teacher as model of skilled performance. It begins with the assumption that teachers are, in the broadest sense, adaptively sensible. That is, when there is a substantial discrepancy

between some observer's judgment regarding what a teacher ought to do and the observed performance of that teacher, it is our first inclination to ask "What is it about the total set of circumstances in which this teacher is engaged that would make the observed activities of the teacher sensible?" Alternatively stated, "In terms of what goals and definition of the situation would the behavior under observation be adaptive?" To answer such questions requires an investigation of the teacher's goals and plans; the thoughts, motives, and anxieties experienced by the teacher in the course of instruction; the problems faced by the teacher and the strategies employed to deal with them; and the characteristics of individual teacher satisfaction and disappointment.

This approach to the study of teaching is consistent with principles enunciated years ago by many mathematics educators regarding the proper attitude that teachers ought to hold with regard to observations of pupil error in learning mathematics. They suggested that when a pupil makes a mathematical error, teachers should not immediately leap to correct that particular miscue. Rather, they should raise the question of what possible system of mathematics that pupil might have in her head that would lead her to consider the response she had just offered both proper and legitimate. In the final analysis, influencing the mathematics concepts retained mentally that generate student responses to mathematical problems is more important than merely shaping and judging specific overt mathematical responses. Similarly, understanding and influencing the pedagogy in the mind and in the heart of the teacher that generates the variety of particular teacher behaviors is more important than merely characterizing and counting the behaviors themselves.

As a strategy of research, the wisdom of the practitioner suggests

that examples be identified of experts working in context and study intensively the strategies they employ, the problems they sense and confront, and the modes of practice that appear to achieve their purposes for them.[6] This is a mode of research on teaching that characterizes much of the work of my colleagues at the Institute for Research on Teaching (Shulman & Lanier, 1977). Another research group with which I work (Elstein, Shulman, & Sprafka, 1978) has been studying the problem-solving processes of physicians in order to develop a more accurate and comprehensive understanding of medical diagnostic reasoning. As is often the case in such research, we discovered that the manner in which experts perform their tasks is not identical to that prescribed by textbooks in the field nor even with the typical self-report provided by practitioners themselves. Hence, it is important to note that researchers study the wisdom of practitioners by observing what they do, as well as by asking them how they manage. The self-report alone may contain significant distortions of actual practice. However, it is as important to know what practitioners think they are doing as it is to know what they are actually doing in order to build a comprehensive theory.

This sort of research has also been conducted to study the character of expertise in chess (de Groot, 1965); among trust investment officers (Clarkson, 1962); and is reviewed more generally in Shulman & Elstein (1975). Closer to the topics of this volume, the character of expertise has been studied in architectural design by Eastman (1970), in musical composition by Bahle (reported in de Groot, 1965), and in still-life painting by Getzels and Csickszentmihalyi (1976).

---

[6] Hawkins intended for the rare, outstanding teacher to be the only subject of this research genre. However, we find that it is not only the "good teacher" (if we can find him/her) who does good teaching. Most teachers can teach well under some conditions. Thus, our question is not "Who is the good teacher?" but "When is a teacher good?"

A highly similar research strategy is even to be found in the work of historian of science Thomas Kuhn (1977). How can contemporary scientific scholars make sense of the writings of early scientists who did not share the same contemporary perspectives on nature? Kuhn reports his frustrated efforts to understand Aristotle's concept of mechanics in physics. He reports being troubled by the serious inaccuracies of Aristotle's observations and interpretations.

> When dealing with subjects other than physics, Aristotle had been an acute and naturalistic observer. In such fields as biology or political behavior, his interpretations of phenomena had often been, in addition, both penetrating and deep. How could his characteristic talents have failed him so when applied to motion? How could he have said about it so many apparently absurd things? And, above all, why had his view been taken so seriously for so long a time by so many of his successors? The more I read, the more puzzled I became. Aristotle could, of course, have been wrong -- I had no doubt that he was -- but was it conceivable that his errors had been so blatant? (page xi)

Kuhn then describes his insight in recognizing that he had to read Aristotle from Aristotle's perspective rather than from the perspective of contemporary physics. When he came to understand Aristotle's physics in the light of the more general Greek worldview, the incongruities in the work of that ancient philosopher dissolved.

> Trying to transmit such lessons to students, I offer them a maxim: When reading the works of an important thinker, look first for the apparent absurdities in the text and ask yourself how a sensible person could have written them. When you find an answer, I continue, when those passages make sense, then you may find the more central passages, ones you previously thought you understood, have changed their meaning. (page xii)

In these passages Kuhn is doing history of science in a manner analogous to the ethnographer, the information processing psychologist, and the student of the wisdom of practice. All are attempting to

understand the ways in which reality is constructed and defined in the minds of particular persons, whether living or dead.

A particularly illuminating example of such research with teachers is contained in Yinger's (Note 5, Note 6) studies of teacher planning. These studies involved planning activities and subsequent teaching performance of a single teacher over a five-month period.

One of the important virtues of research of this sort is that discrepancies between what experts say they are doing and how they actually accomplish their craft are made explicit and problematic for the experts themselves. Since many experts are engaged in the business of teaching others their form of expertise, discrepancies between what they say about what they do and how they actually perform become of great pedagogical interest. This is especially important when the experts have difficulty articulating the manner in which they perform. For example, experts in aesthetic education sometimes make evaluative statements regarding instances of teaching they observe, but find it difficult to explicate the principles and standards they are employing to make those judgments. The teachers whom they observe also make such implicit judgments. By clarifying and juxtaposing the two underlying "wisdoms" -- that of the subject matter expert and that of the teacher -- they might be able to identify the grounds for disagreement and deal with them directly.

I have up to now been arguing that the wisdom of the practitioner identifies one strategy we ought to be following in the study of expertise in teaching. What are the specific arguments in favor of this approach?

First, I claim with Hawkins that the expertise of teachers regarding instruction is likely to be greater than that of the extant theories

in our field in significant ways.

Second, I have asserted that an understanding of how teachers cope with the realities of teaching can guide our perspectives on the wider range of influences on pedagogical practice better than our more limited theoretical purviews typically can. Thus the psychologist, subject matter specialist, group process theorist, or educational administrator will only focus on a portion of the total reality to which the teacher in practice must accomodate. Third, when researchers' theories are based on the study of practice, they are likely to find less difficulty in intelligent dissemination of that knowledge back to practitioners. Since the research will have been an attempt to understand practice in its own terms, there ought to be less need to translate the alien language of the researcher into the common sense everyday language of the practitioner.

Finally, research conducted with the practitioner as co-investigator and in the language of practice is more likely to reflect the currently more equitable distribution of power between researcher and teacher. Research conducted *with,* rather than *on,* teachers is therefore likely to encounter less resistance from teachers both in its conduct and subsequent interpretation.

One argument that has been leveled against this research approach is its susceptibility to the naturalistic fallacy. That is, there is the danger of equating what *is* with what *ought to be*. In so doing, researchers may treat the status quo as the standard for excellence and forego opportunities for improving practice. Perpetuation of the status quo is unlikely to be a problem for several reasons. Investigators typically study a number of practitioners in such research rather than only one. There is sufficient natural variation among practitioners to

render improbable the spectre of a monolithic, internally consistent current mode of operations emerging from research descriptions. Indeed, the differences among teachers and within the same teacher across situations, in both knowledge and strategies, become significant sources of new thinking about teaching. Composite models of practice built up from the individual features of particular teachers are likely to be more instructive than the work of any single practitioner alone. Moreover, these descriptions are scruitinized critically by the teachers themselves, as well as by experts in the appropriate subject matter and social science research fields, in order to understand both their virtues and limitations more fully.

In summary, this approach seeks as its goal *research-into-practice*, in both senses of that properly ambiguous phrase. Research grows out of the disciplined investigation of practice and practitioners, using their concerns, problems, insights, activities and traditions as its starting point. Yet its mission is incomplete and its promise unfulfilled until research has returned to that same domain of practice by informing judgments, increasing knowledge, and improving teaching and learning.

This concern for the development of research-based theories of practice dedicated to the understanding and ultimate improvement of practice raises a serious question: What are the ways in which research can inform practice? This question is typically formulated in terms of the problems of dissemination, to which I now turn.

Research and Practice: Conceptions of Dissemination

Given the assumption that research and practice are two separate activities in which members of different professions engage in relative

isolation from one another, how does the knowledge produced by the research profession become accessible to those who teach?[7]

The work of Tikunoff and Ward (1979) as well as that of Bussis, Chittenden, and Amarel (1979), deals with the dilemma of dissemination through refusing to accept the basic dichotomy. That is, they argue that researchers and teachers ought to produce knowledge jointly, thereby becoming a single community of discourse. By becoming members of a single knowledge-producing and knowledge-using community, they would remove the need for translation and dissemination across present boundaries. Tikunoff and Ward especially argue that their approach was not only effective but practical on a large scale. It appears more prudent to claim that the involvement of teachers as co-investigators in research on teaching produces a new type of research enterprise and concomitantly new forms of pedagogical knowledge, with special personal outcomes for the particular teachers involved. I suspect that the basic dichotomy between the research community and the community of practice will remain even after substantial numbers of teachers have gained entry into the research community via research collaboration. Therefore, the problem of dissemination will remain.

The concept of dissemination most popular in the field of education comes from analyses of the diffusion of technological innovations in health and agriculture. In this conception, what is normally disseminated is a tangible product or object that can be employed by individuals to

---

[7]The mirror question was rarely asked, though it is at least as important. How does the typically tacit knowledge developed in the minds of practitioners become accessible to the community of scholars? This "reverse dissemination" question is precisely the focus of wisdom-of-practitioner studies. Its importance is echoed by McLaughlin and Marsh (1978) in their report of the massive Rand studies of the spread of educational innovations. They observe "in terms of knowledge about the practice of teaching, teachers often represent the best clinical expertise available" (p. 87). Their report is in general support of the arguments regarding dissemination offered in this section.

achieve certain purposes. Witness the success of agricultural extension agents in helping farmers grow more and better crops where the road from the discovery of new forms of hybrid corn, special fertilizers, or weed controls to their use by farmers is clear and impressive. Why cannot educational innovations be similarly disseminated?

It seems clear that even those educational innovations most directly analogous to technological products are not as readily disseminated. These are the materials and media of instruction that typically accompany new educational programs or curriculum packages. In great measure, this is because the teacher who must use these materials is unlikely to see them as unequivocally helpful. The classic dissemination model depends upon the recipient accepting the goals for which the innovation has been developed. Consider, for example, the attempts to diffuse contraceptive loops in India, which failed dramatically compared to the successful diffusion of hybrid corn. There was no question in the minds of farmers that they wanted to produce more, but there were serious questions in the minds of parents about whether they wanted to produce less. It is for this reason that research, such as Chapman's, on the relationships between conceptions of arts education and teachers' goals and plans for instruction is very important. It therefore appears that dissemination for education is less like that of new technologies and more a question of modifying prevailing views of practitioners.

Dissemination for changing prevailing views is likely to be quite different from the diffusion of technological innovations. It appears to be more similar to the spread of ideology or of religion. The growth of Islam or the more recent spread of the peace movement may be more helpful analogies to the processes of educational dissemination. If research is to influence practice, researchers may have to find a set

of processes for significantly influencing the prevailing views of practitioners regarding both the goals and methods of instruction. The model of the agricultural extension agent for whom the goals of farming are rarely problematic is unlikely to be helpful.

Yet another view of dissemination holds that neither specific products nor prevailing views are translated and communicated. Rather, the process of research produces opportunities for teachers to reflect on their own practice, thus becoming more aware of what they actually do as well as the meanings and interpretations that can be brought to bear on their actions. But how can research provide such opportunities for teachers, who are not themselves personally engaged in the research process?

I believe that research informs practice through the provision of instances, of concrete examples of both practice and values, which reflective teachers can employ as contrastive mirrors against which to compare their own efforts. In this regard research is a rich source of such instances, albeit not the only one. In general, judgment is informed and behavior changed through contact with great works of art, the aphorisms of philosphers and saints, and the exhortations of evangelists and politicians. From research-grounded sources, judgment can be informed by the publication of the Surgeon General's reports, the announcement of test-score declines, research reports on the effectiveness of direct instruction, concrete case studies of children learning to read or of pupils learning to go to school, or detailed evocative descriptions of teachers accomplishing complex curricular integrations across the school day or week.

I thus conclude that thinking about the translation of research into practice must itself be informed by the recognition that

disseminators are not engaged in a single activity but in several. They are diffusing specific materials and media of instruction, attempting to influence prevailing views, providing opportunities for critical reflection, and creating instances of practice and its purposes which can inform the judgments of teachers. Programmatic efforts at dissemination must therefore reflect the multiplicity of forms and goals which the concept of dissemination demands.

Dissemination within Research: Problems of Generalizability

Rosenshine (1979), among others, has raised the spectre of non-generalizability with regard to many of the newer forms of research. Unlike the more traditional quantitative methods from either psychology or sociology, it is claimed, ethnographic research, case studies, clinical and information-processing approaches lack clear canons for demonstrating the generalizability of research findings. Researchers therefore are unable to generalize the research conclusions safely beyond the boundaries of the immediate research sample itself.

I believe that claim can be refuted through examination of the assumptions underlying generalizability in the quantitative approaches. Experimental psychologists argue that by randomly selecting samples from a defined population, generalization back to that population is legitimated. This is the claim for generalizability typically made by sociologists employing survey samples as well. However, in a now-classic paper, Cornfield and Tukey (1956) have demonstrated that it is nearly impossible to achieve the theoretical claim of true random selection from a total population. Therefore they have argued that it is necessary for researchers to provide their readers with a clear

and detailed description of the characteristics of individuals and research settings so that readers can supply the degree of generalizability themselves. Thus, even for quantitative research, the question of generalizability typically becomes a matter of judgment rather than an absolute product of research evidence.

Generalizability of this sort is a problem for philosophy of science since the goal of science is typically theory development. Researchers are concerned with how samples have been drawn from populations and settings in order to be able to make valid statements about aspects of nature or human behavior. In both qualitative and quantitative research they are confronted by a similar problem. They must ask themselves, in the words of David Hamilton (Note 7), "What is this a case of?" This is true whether they are dealing with research that is experimental, correlational, or ethnographic. The bridge between the reported phenomenon and the limits of its generalizability cannot be built by the logic of method. It can only be built by the logic of human judgment. Moreover, in examining the usefulness of research for the improvement of teaching, researchers must extend their concept of generalizability to include the impact of research findings on the development of teachers -- a form of pragmatic rather than scientific generalizability.

The Elusive Criterion

One of the most important questions repeatedly raised, and skillfully evaded, by educators and researchers deals with the criterion problem in arts and aesthetic education. The problem of criterion exists at several levels. For the researcher there is the question of outcome measures for assessing the consequences of variations in observed approaches to teaching in the arts. Controversies

abound in domains as ostensibly straightforward as reading and mathematics regarding the proper measurement of educational outcomes. How much more is it the case for assessing the outcomes of education in the arts?

The problem also exists painfully at the level of educational practice itself. By what standards is the classroom teacher to judge the quality of artistic performance by pupils or the aesthetic qualities inherent in particular episodes of instruction? Arts specialists are extremely reluctant to state the specific standards or criteria they employ to render their judgments. They assert that these judgments are subtle and complex, not capable of propositional formulation. Nevertheless, they maintain the expectation that teachers are obligated to judge their own teaching on the basis of these undefinable standards. How are teachers to employ standards they do not understand, have not been taught, and have not had an opportunity to learn?[8]

As I discussed earlier, it is extremely difficult to communicate standards of practice which have not been clearly articulated by those who fashion them. Moreover, unexamined standards employed intuitively by experts are often in danger of being communicated verbally in one form while being employed by the experts in a very different way. Hence, many of the problems of teacher preparation in the arts rest on the difficulties currently experienced in specifying criteria for judging excellence in arts education. The elusiveness of the criterion, therefore, constitutes a crisis for the Academy rather than an indictment of the practitioner.

All teaching involves judgment. Since learning is typically defined as an internal change in learners inferred from observable

---

[8]Specialists frequently attempt to specify such goals and standards through devising elaborate, formal taxonomies for practitioners to employ. These are rarely helpful and typically convince others that the judgments must be far too complex for any mere mortal to perform. Those standards are also likely to be a set of professed principles, not those actually applied.

changes in behavior, the process of teaching demands continuous inferences or judgments from observed pupil behavior to inferred underlying states of mind, motive and emotion. Arts educators, researchers, and teachers must collaborate in a series of investigations to explicate those judgmental relationships between observables and underlying learning processes if they are to develop a durable program of research and teacher preparation in this field. Researchers need to conduct programs of research in which the arts specialists themselves make the bases for their judgments of both products and instruction manifest and clear. Similarly, they need to do studies of teachers in the arts to clarify the nature of their judgments of instructional effectiveness. People can then begin to study ways of bringing the judgments of practitioners and those of experts in the arts in closer concordance.

The judgments of experts are based on criteria which usually seem far narrower than those of practitioners. The latter must take account of more than the correspondence between the processes and products of teaching and the standards implicit in the subject matter. They must also use criteria of active classroom involvement, articulation with school subjects taught simultaneously or serially, and other matters important for the accomplishment of successful classroom practice. Such a program of research could lead to more intelligent definitions of criteria than are current in most other subject fields.

Arts in the Curriculum

What is the place of arts in the total curriculum? Some argue that individual art forms should be taught separately and in their own terms. Others argue the emphasis should be on the performance of the art itself. Still others say that the greater emphasis should be placed upon proper experience with, and appreciation, understanding, and critical evaluation of the various art forms.

Among specialists in the arts and arts education, the concept of integration of the arts into the other subject areas is distressing. They view the forms of integration as inevitably perverting the true character of the arts, rendering them handmaidens of the other curriculum areas. Yet the theme of coordinating and integrating arts education with the rest of the curriculum continues to appear.

What forms might this integration take? One assertion is that the arts could build character and enhance the general quality of life. Another possibility is that arts instruction could serve to motivate and/or consolidate learning in the more traditional subject areas. The arts could also serve as a source of powerful methods or metaphors to increase the transfer of student learning in other subject areas. Finally, the arts might serve as a means for improving classroom and school learning climates through activities demanding large group involvement and cooperation. Naturally, complex combinations of these roles could also be envisaged.

Educators and researchers should recognize that the arts are not alone in claiming these special virtues of enhancing creativity, character, curricular coherence, and communal cohesion. Most other subject areas -- mathematics, science, social studies, for example -- can also lay claim to these qualities. Given the unavoidable fact that the demands made on public education are increasing while the lengths of school days and years remain constant, educators in the arts and aesthetics must be ready to demonstrate that devoting curricular time to their areas not only serves to achieve the unique ends of arts education but also enhances accomplishment of goals in other domains. Serious consideration of the integration of the arts into the curriculum

seems therefore unavoidable. It may be necessary to do some injustice to each of the several disciplines in order to make it possible to optimize instruction across the full set.

Concluding Remarks

Much debate in the field of research on teaching in the arts revolves around the question of what research on teaching could contribute to understanding and improvement of teaching in the arts. In these closing remarks I would like to reverse that question. What can a developing understanding of education in the arts contribute to the general field of research on teaching? It is perhaps a selfish question, for my own commitments and obligations rest in the general field of research on teaching. Yet I feel it is important to recognize explicitly that the benefits of collaboration between these two fields are bilateral.

I believe that education in the arts can serve as a powerful counter-example to the currently popular studies of teaching in the "basic skills." While many educators express discomfort with the conclusions offered by Rosenshine (1976) on the superiority of direct instruction, the existence and popular faith in standardized achievement tests in those areas tend to prevail against those doubts. Researchers on teaching in the arts will not be able to employ existing instruments uncritically in their investigations. They will be forced to confront directly the purposes and processes of arts instruction as they wrestle with the problem of a criterion. I cannot imagine that simple conclusions regarding the effectiveness of direct instruction will be possible in the arts. Thus, through new programs of research in an area where the simpler methods of our current work will not be tolerated, we may ultimately develop strategies of

inquiry which we can turn back on the basic skills to improve their investigation.

In current research on teaching in the traditional subject areas, the distinction between cognitive and affective outcomes is maintained with ease. Thus, although all practitioners recognize that the two aspects of learning interpenetrate in reality, researchers readily make the distinction for purposes of study. Enormous efforts are directed at calibrating instruments for measuring cognitive achievement, while the affective outcomes are either ignored or measured grossly. In aesthetics education, the fusion of the cognitive and affective is undeniable. To study properly the teaching of the arts, researchers will need to employ new methods which give proper attention to the manner in which cognitive and affective factors interact in learning and teaching. Since this interaction is just as important in reading, mathematics, and the sciences, what is learned from research on teaching arts will be valuable for improving such studies in other subject areas.

Finally, people should not ignore the power of apt metaphors for directing thinking in research on teaching. Though I was critical of phrases like "the teacher as artist" earlier in this paper, there is no question that metaphors from the arts can serve a powerful heuristic function in guiding investigations of teaching in all domains. Investigators must simply keep in mind that metaphors become most interesting at the points where they break down and become sensitive to the limits of our metaphor-making as well as to the aptness of the metaphors alone.

If there is a single lesson from research on teaching I would hope could be conveyed to those investigating teaching in the arts, it is the

avoidance of disciplinary dogma and doctrine in planning research programs and choosing among research methods. So much time and energy continues to be wasted in arguments about the relative effectiveness of quantitative and qualitative research methods. I believe that the problems of research on teaching are far too complex for any one research method. Those who wish to study teaching in the arts must be prepared to adopt a disciplined eclecticism as their general orientation toward research. The particular questions raised by research programs must dictate the selection of methods and combinations of methods appropriate to the questions addressed. If research on teaching in the arts has developed later than research in other areas, this may become a virtue rather than a liability. Investigators in this field may profit from the experiences of those who preceded them, avoiding their errors and setting new standards for research in the future.

Reference Notes

1. Finley, F.N. Vertical transfer of instruction based on cognitive strategies for a sequence of geologic tasks. Unpublished doctoral dissertation, Michigan State University, East Lansing, Mich., 1977.

2. Erickson, F. Unpublished manuscript, Seminar on Conceptions of Conception, Institute for Research on Teaching, Michigan State University, East Lansing, Mich., 1979.

3. Erickson, F. What makes school ethnography ethnographic? Newsletter, Council on Anthropology and Education, Chicago, 1973.

4. Smith, L. Accidents, serendipity and making the common place problematic: The origin and evoluation of the field study "problem". Proceedings of the conference on "The Study of Schooling: Field-Based Methodologies in Educational Research." Research and Development Center for Individualized Schooling. Madison, Wis., November, 1978.

5. Yinger, R.J. A study of teacher planning: Description and theory development using ethnographic and information processing methods. Unpublished doctoral dissertation, Michigan State University, East Lansing, Mich., 1977.

6. Yinger, R.J. A study of teacher planning: Description and model of preactive decision making (Res. Ser. No. 18). East Lansing, Michigan: Institute for Research on Teaching, Michigan State University, 1978.

7. Hamilton, D. On generalization in the educational sciences. Proceedings of the conference on "The Study of Schooling: Field-Based Methodologies in Educational Research." Research and Development Center for Individualized Schooling. Madison, Wis., November, 1978.

References

Bussis, A.M., Chittenden, E.A., & Amarel, M. Collaborative research. In G. Kneiter & J. Stallings (Eds.), Third yearbook on research in arts and aesthetic education. St. Louis, Mo.: CEMREL, Inc., 1979.

Chapman, L.H. The bearing of artistic and educational commitments on the teaching of art. In G. Kneiter & J. Stallings (Eds.), Third yearbook on research in arts and aesthetic education. St. Louis, Mo.: CEMREL, Inc., 1979.

Clarkson, G.P.E. Portfolio selection: A simulation of trust investment. Englewood Cliffs, N.J.: Prentice-Hall, 1962.

Cornfield, J., & Tukey, J.W. Average values of mean squares in factorials. Anuals of mathematical statistics, 1956, 27, 907-949.

de Groot, A.D. Thought and choice in chess. The Hague: Mouton, 1965.

Eastman, C.M. On the analysis of intuitive design processes. In G. Moore, (Ed.), Emerging methods in environmental design and planning. Cambridge, Mass.: MIT Press, 1970.

Efland, A.D. Conceptions of teaching in the arts. In G. Kneiter & J. Stallings (Eds.), Third yearbook on research in arts and aesthetic education. St. Louis, Mo.: CEMREL, Inc., 1979.

Elstein, A.S., Shulman, L.S., & Sprafka, S.A. Medical problem solving: An analysis of clinical reasoning. Cambridge, Mass.: Harvard University Press, 1978.

Geertz, C. The interpretation of cultures. New York: Basic Books, 1973.

Getzels, J.W., & Csickszentmihalyi, M. The creative vision: A longitudinal study of problem finding in art. New York: John Wiley & Sons, 1976.

Groen, G., & Resnick, L.B. Can preschool children invent addition algorithms? Journal of Educational Psychology, 1977, 69(6), 645-652.

Hawkins, D. Learning the unteachable. In L.S. Shulman & E.R. Kieslar (Eds.), Learning by discovery: A critical appraisal. Chicago: Rand-McNally, 1966.

House, E.R., Glass, G.V., McLean, L.D., & Walker, D.F. No simple answer: Critique of the "Follow Through" evaluation. Harvard Educational Review, 1978, 48(2), 128-160.

Kuhn, S. The essential tension. Chicago: The University of Chicago Press, 1977.

McLaughlin, M.W., & Marsh, D.D. Staff development and school change. Teachers College Record, 1978, 80(1), 69-94.

Rosenshine, B. Classroom instruction. In N.L. Gage (Ed.), The psychology of teaching methods. Seventy-fifth yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press, 1976, 335-371.

Rosenshine, B. Response to Bussis, Chittenden and Amarel. In G. Kneiter & J. Stallings (Eds.), Third Yearbook on Research in Arts and Aesthetic Education. St. Louis, Mo.: CEMREL, Inc., 1979.

Schwab, J.J. On the corruption of education by psychology. School Review, 1958, 66, 169-184.

Shulman, L.S., & Elstein, A.S. Studies of problem solving, judgment, and decision making. In F. Kerlinger (Ed.), Review of Research in Education, III. Itasca, Ill.: F.E. Peacock, 1975.

Shulman, L.S., & Keislar, E.R. (Eds.), Learning by discovery: A critical appraisal. Chicago: Rand-McNally, 1966.

Shulman, L.S., & Lanier, J.E. The Institute for Research on Teaching: An Overview. Journal of Teacher Education, 1977, 28(4), 44-49.

Shulman, L.S., & Tamir, P. Research on teaching in the natural sciences. In R.M.W. Travers (Ed.), Second handbook of research on teaching. Chicago: Rand-McNally, 1973.

Sorokin, A. Fads and foibles in modern sociology and related sciences. London: Henry Regnery Co., 1956.

Tikunoff, W.J., & Ward, B.A. How the teaching process affects change in the school. In G. Kneiter & J. Stallings (Eds.), Third yearbook on research in arts and aesthetic education. St. Louis, Mo.: CEMREL, Inc., 1979.

Woods, S., Resnick, L.B., & Groen, G. An experimental test of five process models for subtraction. Journal of Educational Psychology, 1975, 67(1), 17-21.

PUBLICATIONS

of the

Institute for Research on Teaching
Michigan State University

as of

August 1, 1979

To order any of the following publications please send check, money order, or prepaid purchase order -- payable to Michigan State University -- to: IRT Publications, 252 Erickson, MSU, East Lansing, MI 48824. Publication prices include only the cost of production and mailing. Michigan residents should add a 4% state sales tax to all orders. The Institute for Research on Teaching is funded primarily by the National Institute of Education, United States Department of Health, Education, and Welfare.

Research Series

No. 1 The Inquiry Theory: An information-processing approach to clinical problem-solving research and application. J.F. Vinsonhaler, C.C. Wagner, & A.S. Elstein. 1978. $2.00

No. 2 Impact on what? The importance of content covered. A.C. Porter, W.H. Schmidt, R.E. Floden, & D.J. Freeman. 1978. $1.75

No. 3 Instructions for using the AJ 832 plotting software package as modified for the CDC 6500 computer. M. Carlyn. 1977. $1.75

No. 4 A taxonomy for classifying elementary school mathematics content. T. Kuhs, W. Schmidt, A. Porter, R. Floden, D. Freeman, & J. Schwille. 1979. $2.25 (This is a revision of an earlier publication, Training manual for the classification of the content of fourth-grade mathematics.)

No. 5 Flexner, accreditation, and evaluation. R.E. Floden. 1978. $1.75

No. 6 Analogy and credentialling. R.E. Floden. 1978. $1.25

No. 7 Conceptions of reading: The Rep Test. M. Johnston. 1978. $1.00

No. 8 Research and development needs for the advancement of teacher education. J.E. Lanier & R.E. Floden. 1978. $3.00

No. 9 On the conceptualization of clinical problem solving. C.C. Wagner & J.F. Vinsonhaler. 1978. $1.50

* No. 10 Applications of the Inquiry Theory to reading and learning disabilities. L. Patriarca, J. VanRoekel, & J.F. Vinsonhaler. 1979.

No. 11 Methods for discovering cues used by judges: Two working papers. C.M. Clark & R.J. Yinger. 1978. $1.00

No. 12 Research on teacher thinking. C.M. Clark & R.J. Yinger. 1978. $2.25

No. 13 Data analysis strategies for quasi-experimental studies where differential group and individual growth rates are assumed. S. Olejnik. 1978. $2.75

No. 14 CLIPIR Pilot Observational Study of Reading Diagnosticians, 1976. A. Lee & A. Weinshank. 1978. $2.00 (with complete data, $5.75)

No. 15 The Inquiry Theoretic approach to clinical problem-solving research and application: Basic Management Information System (BMIS) technical manual Vol. 1. J.F. Vinsonhaler, C.C. Wagner, A.S. Elstein, & L.S. Shulman. 1978. $4.50

No. 16 The user's manual for the Basic Management Information System: BMIS technical manual Vol. 2. C.C. Wagner, J.F. Vinsonhaler, A.S. Elstein, & L.S. Shulman. 1978. $17.00

No. 17 Teachers' conceptions of reading: The evolution of a research study. R. Barr & G.G. Duffy. 1978. $1.25 (This paper has been succeeded by Research Series No. 47.)

No. 18 A study of teacher planning: Description and model of preactive decision making. R.J. Yinger. 1978. $4.25

No. 19 Fieldwork as basis for theory building in research on teaching. R.J. Yinger. 1978. $2.25

No. 20 Choice of a model for research on teacher thinking. C.M. Clark. 1978. $1.50

No. 21 Conceptual issues in the content/strategy distinction. D.J. Freeman. 1978. $2.25

No. 22 An econometric perspective on classroom reading instruction. B.W. Brown & D.H. Saks. 1978. $1.75

No. 23 Identifying cues for use in studies of teacher judgment. C.M. Clark, R.J. Yinger, & S.C. Wildfong. 1978. $1.75

* No. 24 Teacher autonomy and the control of content taught. A.C. Porter. 1978. $3.75

No. 25 Don't they all measure the same thing? Consequences of standardized test selection. R.E. Floden, A.C. Porter, W.H. Schmidt, & D.J. Freeman. 1978. $1.5

* No. 26 Critical moments in the teaching of mathematics. J.C. Shroyer. 1978.

No. 27 Characteristics of the clinical problem-solving model and its relevance to educational research. (Formerly available as an IRT collateral paper.) A.S. Elstein, L.S. Shulman, J.F. Vinsonhaler, C.C. Wagner, & L. Bader. 1978. $1.25

No. 28 The consistency of reading diagnosis. J.F. Vinsonhaler. 1979. $2.25

No. 29 Developing simulated cases of reading and learning disabilities. L. Patriarca, J. VanRoekel, & L. Lezotte. 1978. $2.30

No. 30 Simulating the problem solving of reading clinicians. D. Gil, C.C. Wagner, & J.F. Vinsonhaler. 1978. $2.30

No. 31 Training reading specialists in diagnosis. G. Sherman, & Stephanie Brown. 1979. $2.00

No. 32 Classroom management in the elementary grades. J.E. Brophy & J.C. Putnam. 1978. $3.25

No. 33 An ethnographic study of a teacher's classroom perspective: Implications for curriculum. V.J. Janesick. 1978. $2.25

No. 34 The problem of dead letters: Social perspectives on the teaching of writing. S. Florio. 1978. $1.50

No. 35 Measuring the content of instruction. W.H. Schmidt. 1978. $1.50

No. 36 The relationship of teacher alienation to school workplace characteristics and career stages of teachers. M.J. Vavrus. 1978. $2.50

No. 37 The relationship between diagnosis and remediation in reading: A pilot study. A. Weinshank. 1978. $1.75

No. 38 Teacher judgment of children's reading preferences. T.E. Evans & J.L. Byers. 1979. $2.00

No. 41 Measuring teachers' beliefs about reading. G.G. Duffy & W. Metheny. 1979. $1.75

No. 42 Studies of clinical problem-solving behavior in reading diagnosis. D. Gil, J.F. Vinsonhaler, & C.C. Wagner. 1979. $2.00

* No. 43 Study of the value/belief patterns of teachers and administrators. P. Cusick. 1979.

No. 44 Teacher perceptions of student affect. R.S. Prawat. 1979. $2.50

No. 45 Clinical problem solving in reading: Theory and research. D. Gil, L. Hoffmeyer, J. VanRoekel, J. Vinsonhaler, & A. Weinshank. 1979. $3.30

No. 46 Defining reading diagnosis: Why, what, and how? D. Gil, J.F. Vinsonhaler, & G. Sherman. 1979. $2.00

No. 47 Teacher conceptions of reading and their influence on instruction. R. Bawden, S. Buike, & G. Duffy. 1979. $2.00

No. 48 The potential influence of textbooks on teachers' selection of content for elementary school mathematics. T.M. Kuhs, & D.J. Freeman. 1979. $2.50

* No. 49 The curricular concepts of integration and meaningfulness in reading and writing instruction. W.H. Schmidt, L. Roehler, & M. Buchmann. 1979.

No. 50 Classroom strategy study: Investigating teachers' strategies with problem children. M.M. Rohrkemper & J.E. Brophy. 1979. $1.25

No. 51 Influence of teacher role definition on strategies for coping with problem students. M.M. Rohrkemper & J.E. Brophy. 1979. $2.00

No. 52 Content decision making and the politics of education. J. Schwille, A. Porter, & M. Gant. 1979. $2.50

No. 53 A closer look at standardized tests. D. Freeman, T. Kuhs, L. Knappen, & A. Porter. 1979. $1.50

No. 54 Survey method and its use in research on general mathematics. G. Belli. 1979. $2.30

No. 55 Three studies of teacher planning. C. Clark & R. Yinger. 1979. $2.50

* No. 56 Planning the school year. C.M. Clark & J.L. Elmore. 1979.

* No. 57 Teaching styles at South Bay school: The South Bay study, Part I. K. McNair & B. Joyce. 1979.

* No. 58 Teachers' thoughts while teaching: The South Bay study, Part II. K. McNair & B. Joyce, 1979.

* No. 59 Teachers' conceptions of pupils: The South Bay Study, Part III. G. Morine-Dershimer. 1979.

* No. 60 Teacher plan and classroom reality: The South Bay Study, Part IV. G. Morine-Dershimer. 1979.

Occasional Papers

No. 1 Teachers' concerns and conceptions of reading and the teaching of reading: A literature review. G. Belli, G. Blom, & A. Reiser. 1977. $2.25

No. 2 Teachers and researchers: Toward a proper division of labor. C. Kennedy. 1977. Limited number of free copies.

No. 3 A causal analysis of attitudes toward leadership training in a classroom setting. J.E. Hunter, R.F. Hunter, & J.E. Lopis. 1978. $2.00

* No. 4 The teacher as colleague in classroom research. S. Florio & M. Walsh. 1978.

No. 5 Form and function in mother-toddler conversational turn-taking. M.L. Donahue. 1978. $1.75

No. 6 Individual school buildings do account for differences in measured pupil performance. L.W. Lezotte & J. Passalacqua. 1978. $1.25

No. 7 Research on teaching: A dynamic area of inquiry. J.E. Lanier. 1978. $1.25

No. 8 Test design: A view from practice. L.S. Shulman. 1978. $1.75

No. 9 Relationships between testing and curriculum. A.C. Porter. 1978. $1.00

No. 10 Psychology and mathematics education revisited: 1976. L.S. Shulman. 1978. $1.75

No. 11 Science and mathematics education: Retrospect and prospect. L.S. Shulman & P. Tamir. 1973. $2.00

No. 12 Relating theory to practice in educational research: A working paper. L.S. Shulman. 1978. $1.75

No. 13 Classroom discipline: Toward a diagnostic model integrating teachers' thoughts and actions. D. Gil & P.S. Heller. 1978. $1.00

No. 14 Attention and modality effects in STM: A second look. T. Evans & J. Byers. 1978. $1.75

No. 15 Mere ethnography: Some problems in its use in educational practice. F. Erickson. 1979. $2.00

No. 16 On standards of descriptive validity in studies of classroom activity. F. Erickson. $2.00

*No. 17 Changes in school characteristics coincident with changes in student achievement. W.B. Brookover & L.W. Lezotte. 1979. $5.00 (Executive Summary $1.00)

No. 18 Advances in teacher effectiveness research. J.E. Brophy. 1979. $2.00

No. 19 Research on teaching in the arts: Review, analysis, critique. L.S. Shulman. 1979. $2.75

No. 20 Unidimensional measurement and confirmatory factor analysis. J.E. Hunter & D.W. Gerbing. 1979. $3.00

No. 21 Using observation to improve your teaching. J.E. Brophy. 1979. $1.50.

No. 22 Patterns of sophistication and naivety in anthropology: Distinctive approaches to the study of education. F. Erickson. 1979. $2.60

No. 23 Teacher centers: The new marketplace for teacher educators? A resounding maybe! L.W. Lezotte. 1979. $2.00

No. 24 Five faces of research on teaching. C.M. Clark. 1979.

Conference Series

No. 1 Current directions in research on teaching: A meeting of the Invisible College of Researchers on Teaching, November 17-19, 1976. 1977. $4.25

No. 2 Report of a seminar on field research methods in education. P.A. Cusick. 1978. $1.50

No. 3 Proceedings of the Research-on-Teaching Mathematics Conference, May 1-4, 1977. 1978. $8.25

No. 4 Teachers attaining new roles in research: A challenge for the education community. L.D. Shalaway, J.E. Lanier et al., 1978. $3.50

---

*In production and should be available by October 1979. Please write for exact price and publication date. Advance orders can be taken and held until publications are available.